

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: January 17, 1996
Date Received: January 11, 1996
Project: Hudson, PO #M51906
Date Samples Extracted: January 11, 1996

**RESULTS FROM THE ANALYSIS OF PRODUCT SAMPLES
FOR FINGERPRINT CHARACTERIZATION
BY CAPILLARY GAS CHROMATOGRAPHY
USING A FLAME IONIZATION DETECTOR (FID)
AND ELECTRON CAPTURE DETECTOR (ECD)**

Sample ID

GC Characterization

M51906A

The GC trace using the flame ionization detector (FID) showed the presence of low and medium boiling compounds. The patterns displayed by these peaks are indicative of gasoline and Diesel. The low boiling compounds appeared as a regular pattern of peaks eluting from *n*-C₇ to *n*-C₁₂ showing a maximum near *n*-C₇. The GC/FID trace showed the presence of peaks that appeared to be indicative of augmented levels of benzene, ethylbenzene, and the xylenes. These compounds are characteristic of the constituents commonly found in gasoline.

The medium boiling compounds appeared as a regular pattern of peaks eluting from *n*-C₈ to *n*-C₂₃ showing a maximum near *n*-C₁₃. A regular pattern of the *n*-alkanes is seen for the medium boiling product.

The large peak seen near 27 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

M51906B

The GC trace using the flame ionization detector (FID) showed the presence of medium boiling compounds. The patterns displayed by these peaks are indicative of heating oil or Diesel #2.

The medium boiling compounds appeared as a regular pattern of peaks eluting from *n*-C₉ to *n*-C₂₆ showing a maximum near *n*-C₁₅. A regular pattern of the *n*-alkanes is seen for this product.

The large peak seen near 27 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

Date of Report: January 17, 1996
Date Received: January 11, 1996
Project: Hudson, PO #M51906
Date Samples Extracted: January 11, 1996

**RESULTS FROM THE ANALYSIS OF PRODUCT SAMPLES
FOR FINGERPRINT CHARACTERIZATION
BY CAPILLARY GAS CHROMATOGRAPHY
USING A FLAME IONIZATION DETECTOR (FID)
AND ELECTRON CAPTURE DETECTOR (ECD)**

M51906C

The GC trace using the flame ionization detector (FID) showed the presence of medium boiling compounds. The patterns displayed by these peaks are indicative of heating oil or Diesel #2.

The medium boiling compounds appeared as a regular pattern of peaks eluting from *n*-C₉ to *n*-C₂₆ showing a maximum near *n*-C₁₅. A regular pattern of the *n*-alkanes is seen for this product.

The large peak seen near 27 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

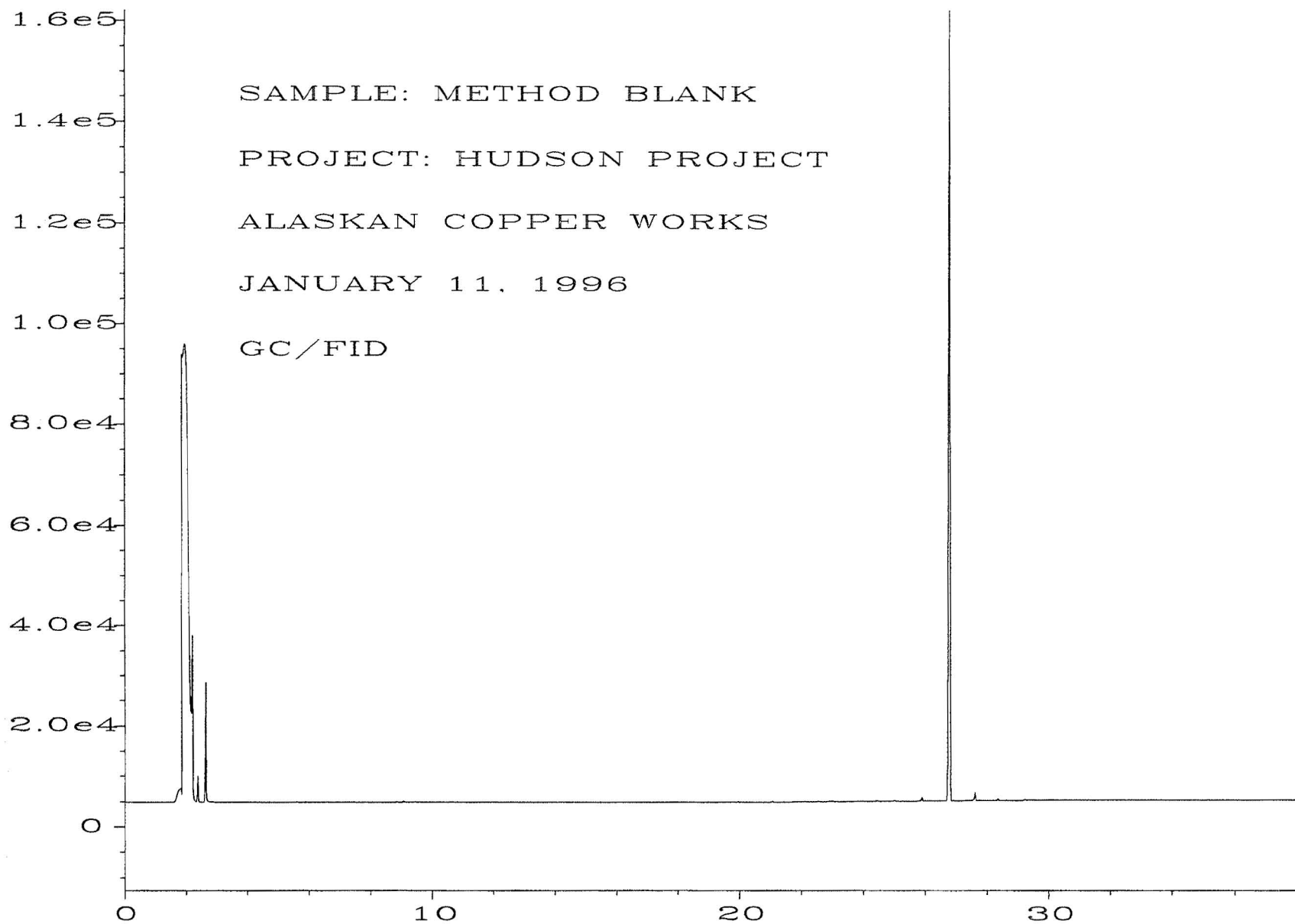
M51906D

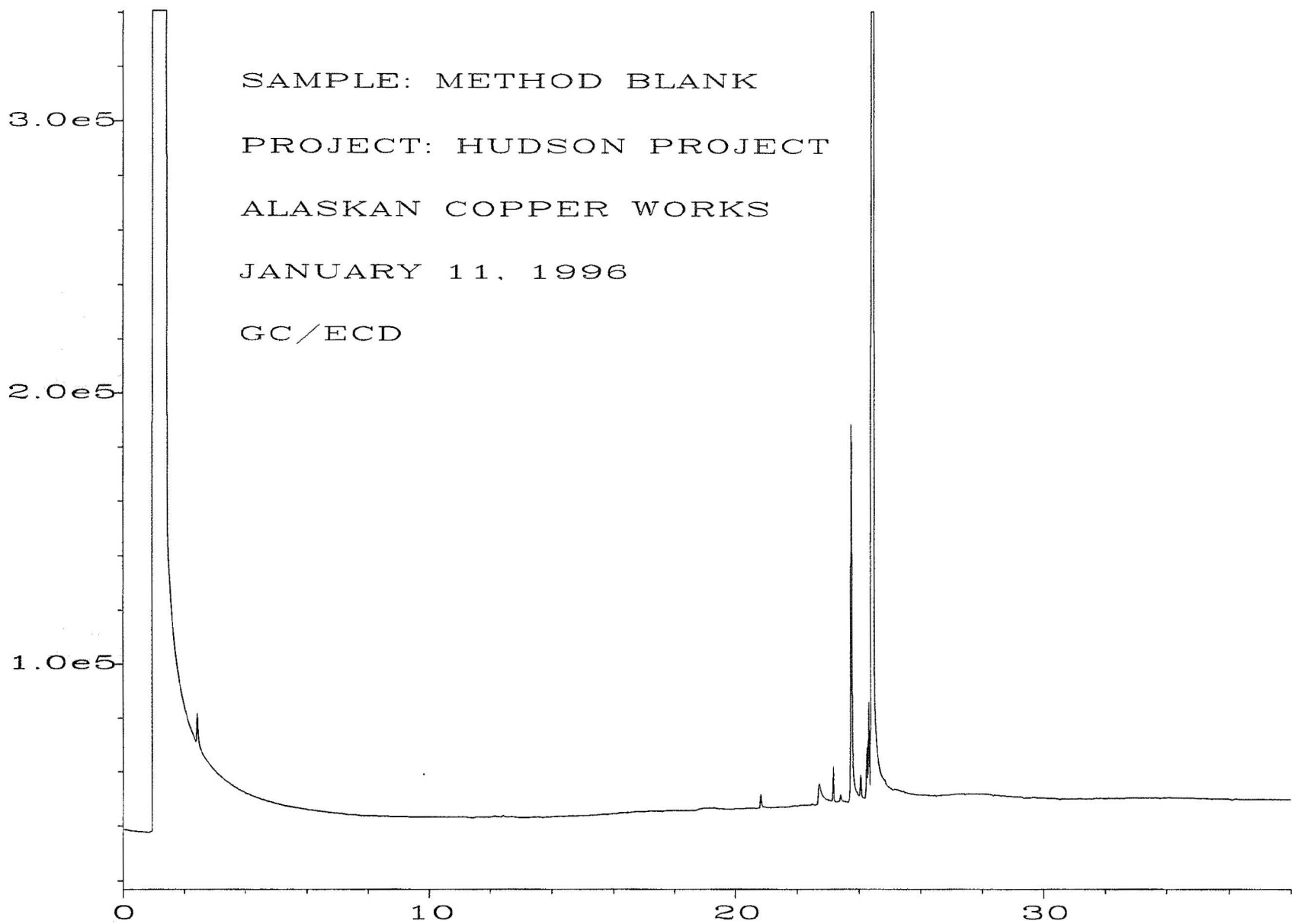
The GC trace using the flame ionization detector (FID) showed the presence of medium and high boiling compounds. The patterns displayed by these peaks are indicative of diesel fuel, as well as motor oil and/or other lubricating oil.

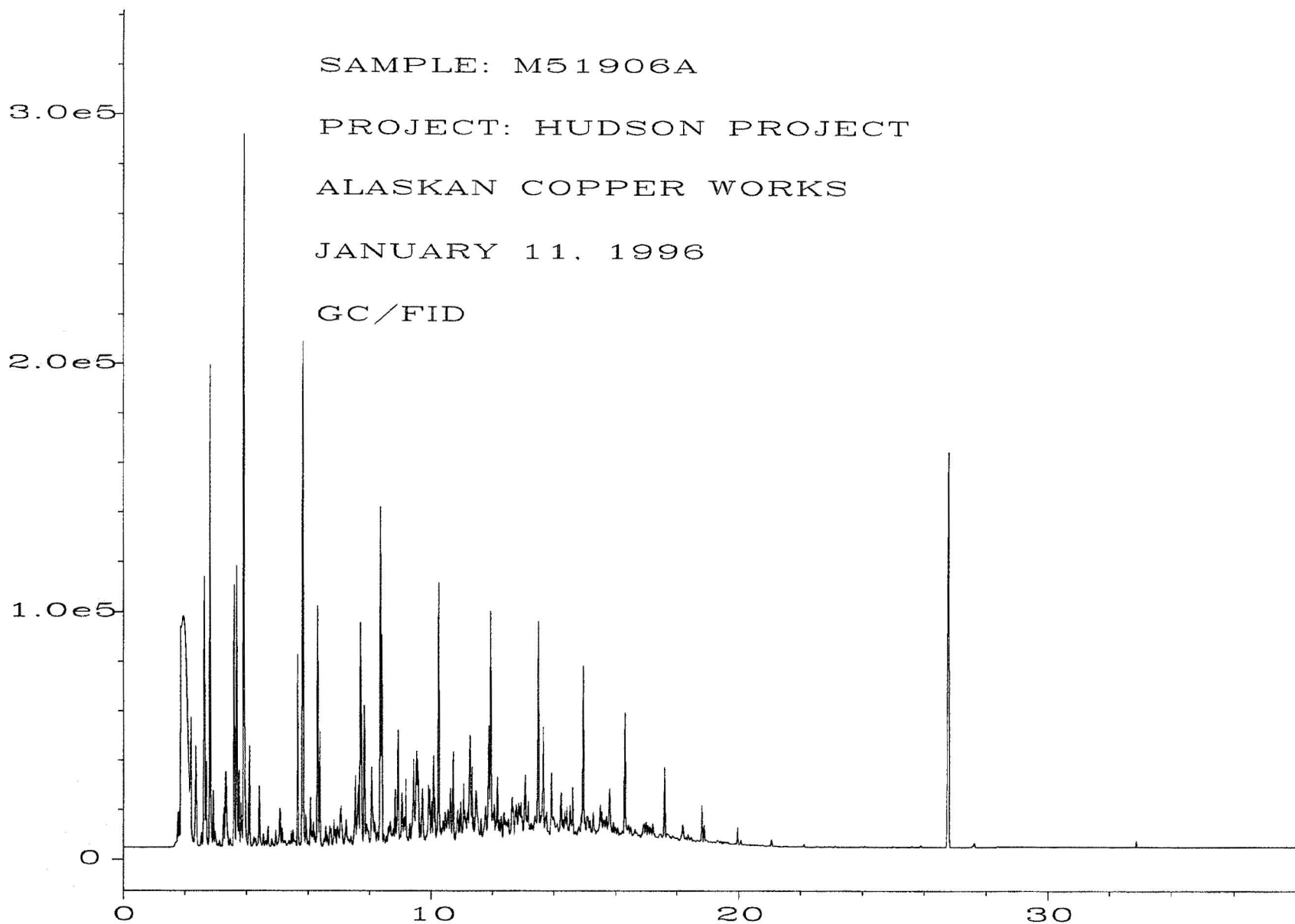
The medium boiling compounds appeared as a pattern of peaks eluting from *n*-C₈ to *n*-C₂₂ showing a maximum near *n*-C₁₅. A regular pattern of the *n*-alkanes is seen for the medium boiling product.

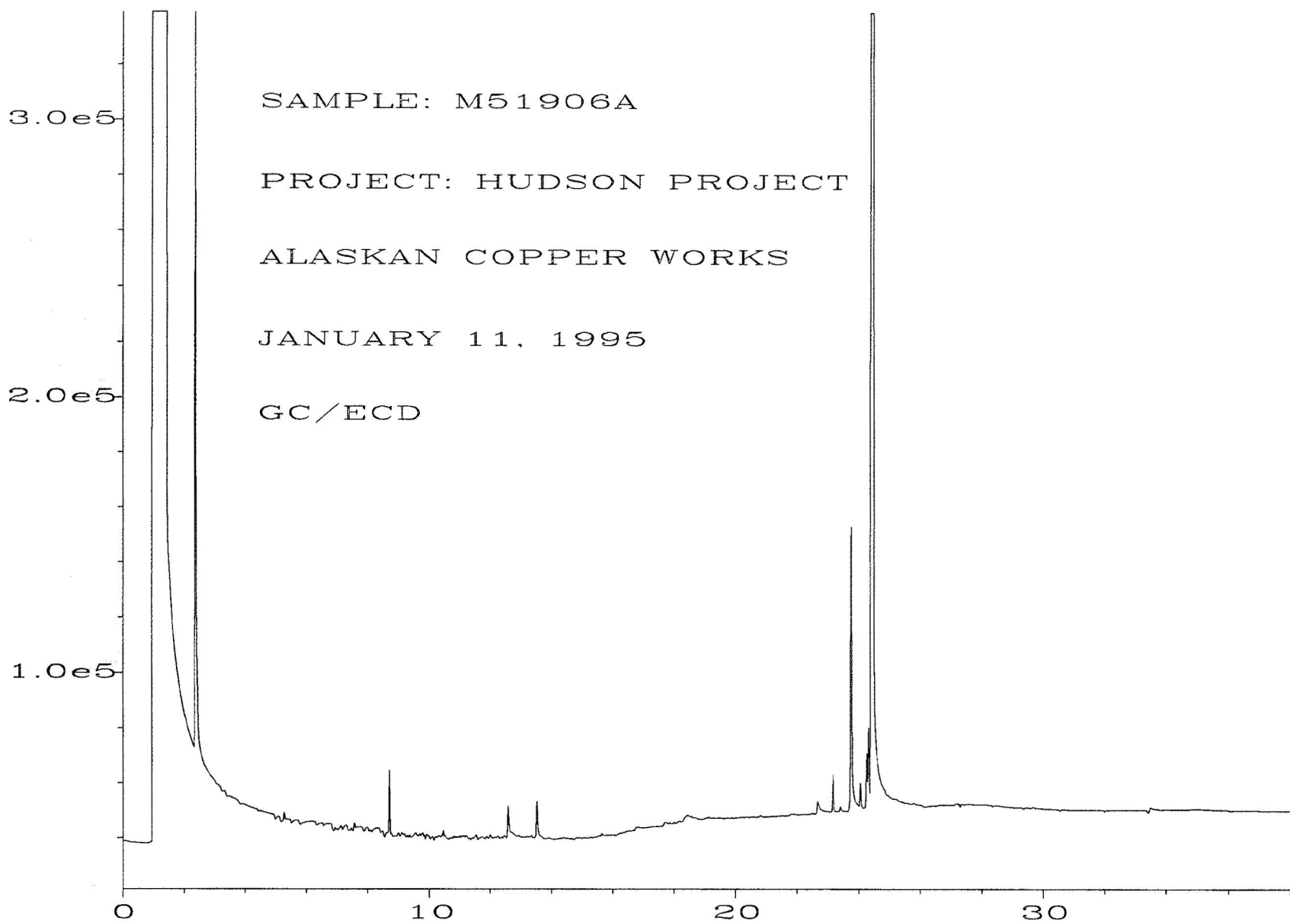
The high boiling compounds appeared as a pattern of peaks eluting from *n*-C₁₈ to beyond *n*-C₃₂ showing a maximum near *n*-C₂₅.

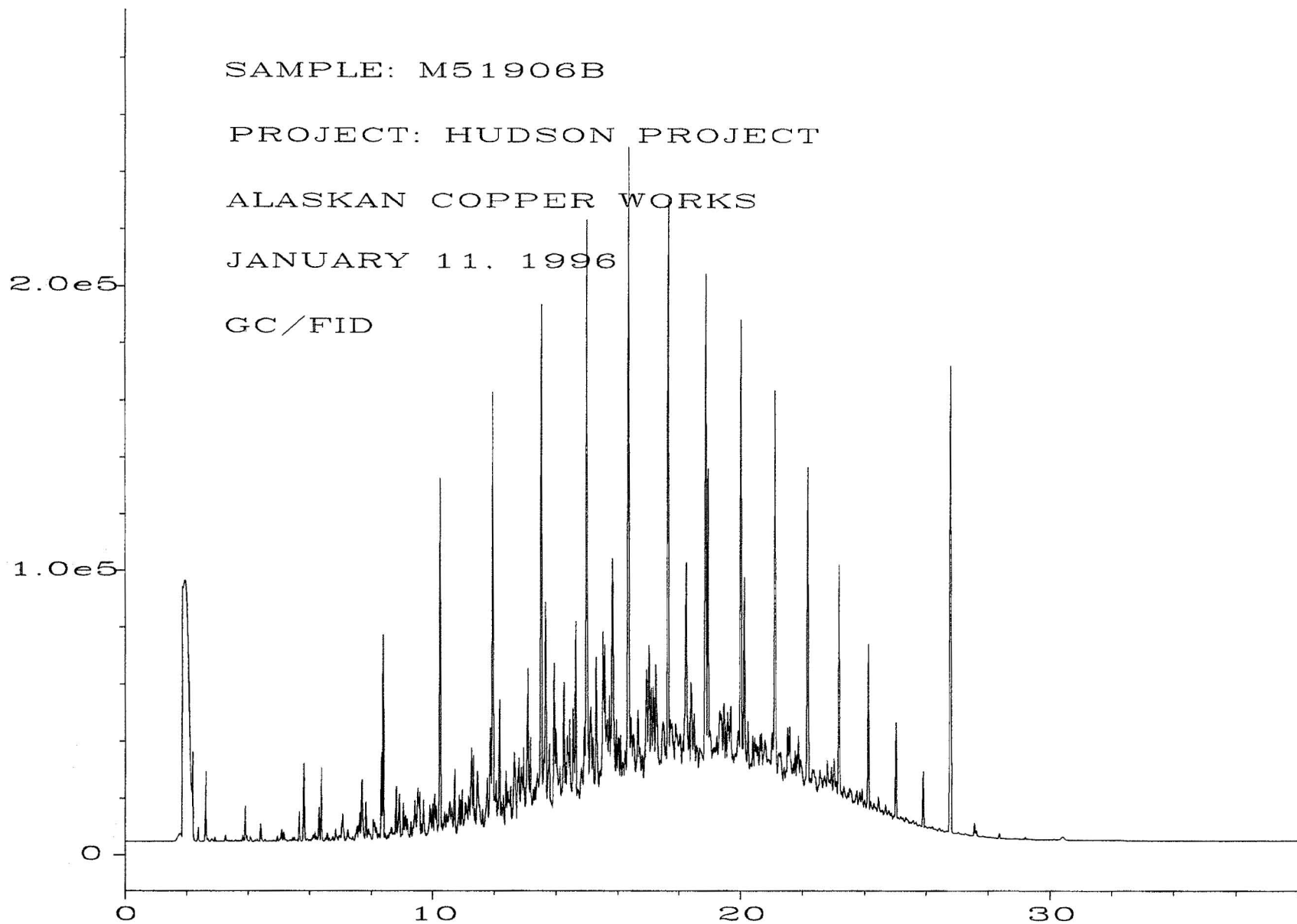
The large peak seen near 27 minutes on the GC/FID trace is pentacosane, added as a quality assurance check for this GC analysis. There is a second internal standard peak seen on the GC/ECD trace at about 26 minutes which is dibutyl chlorendate.

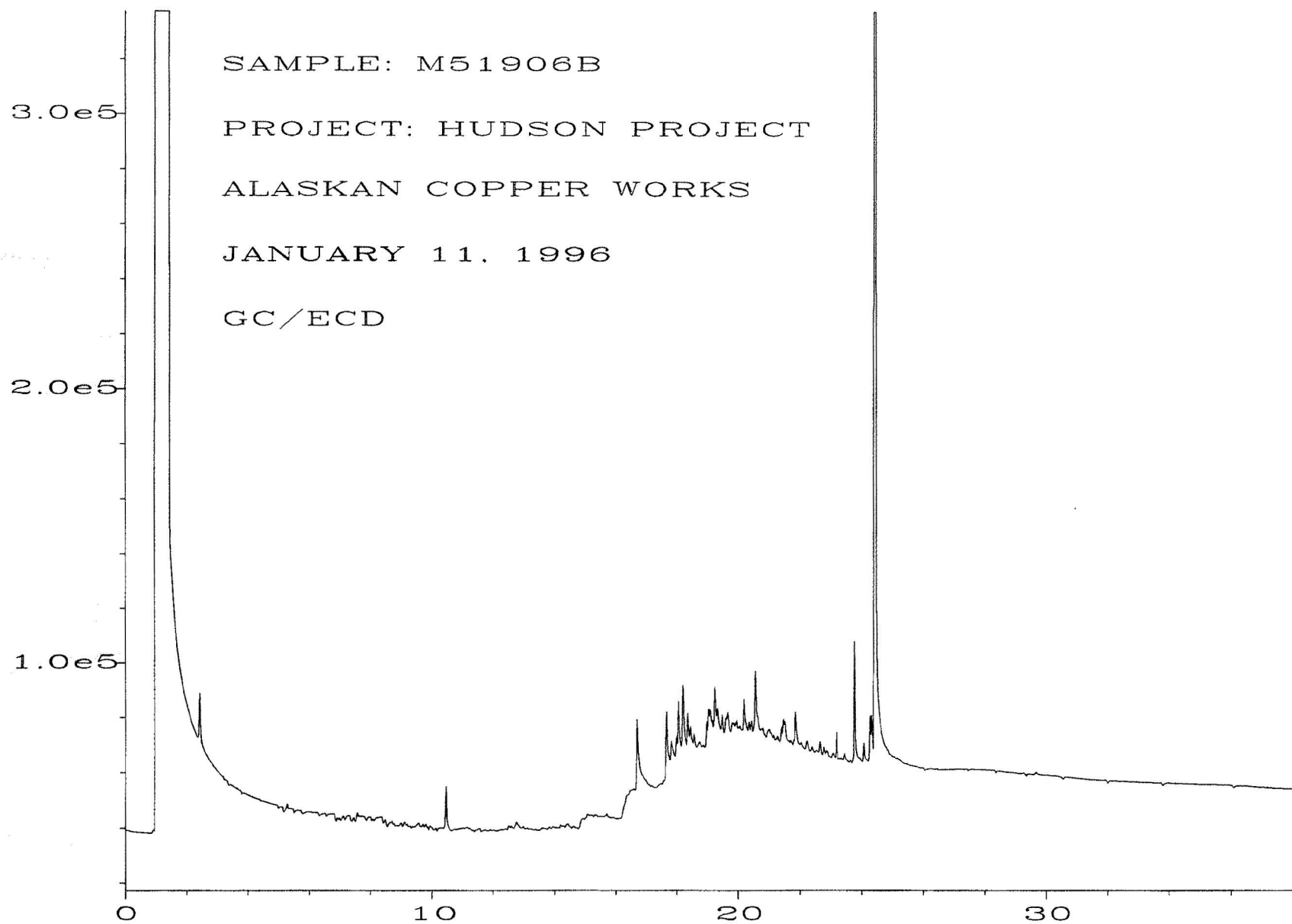


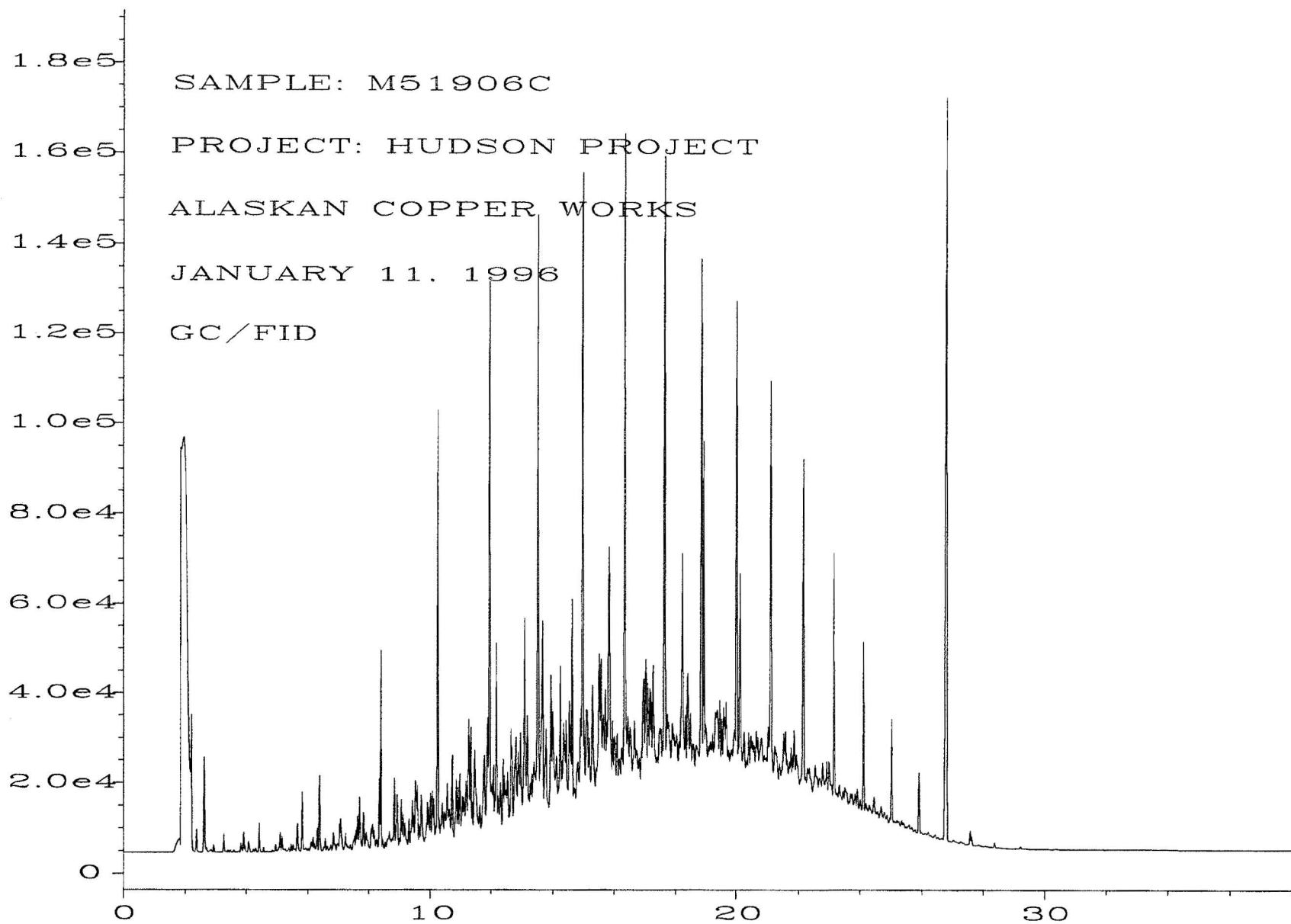


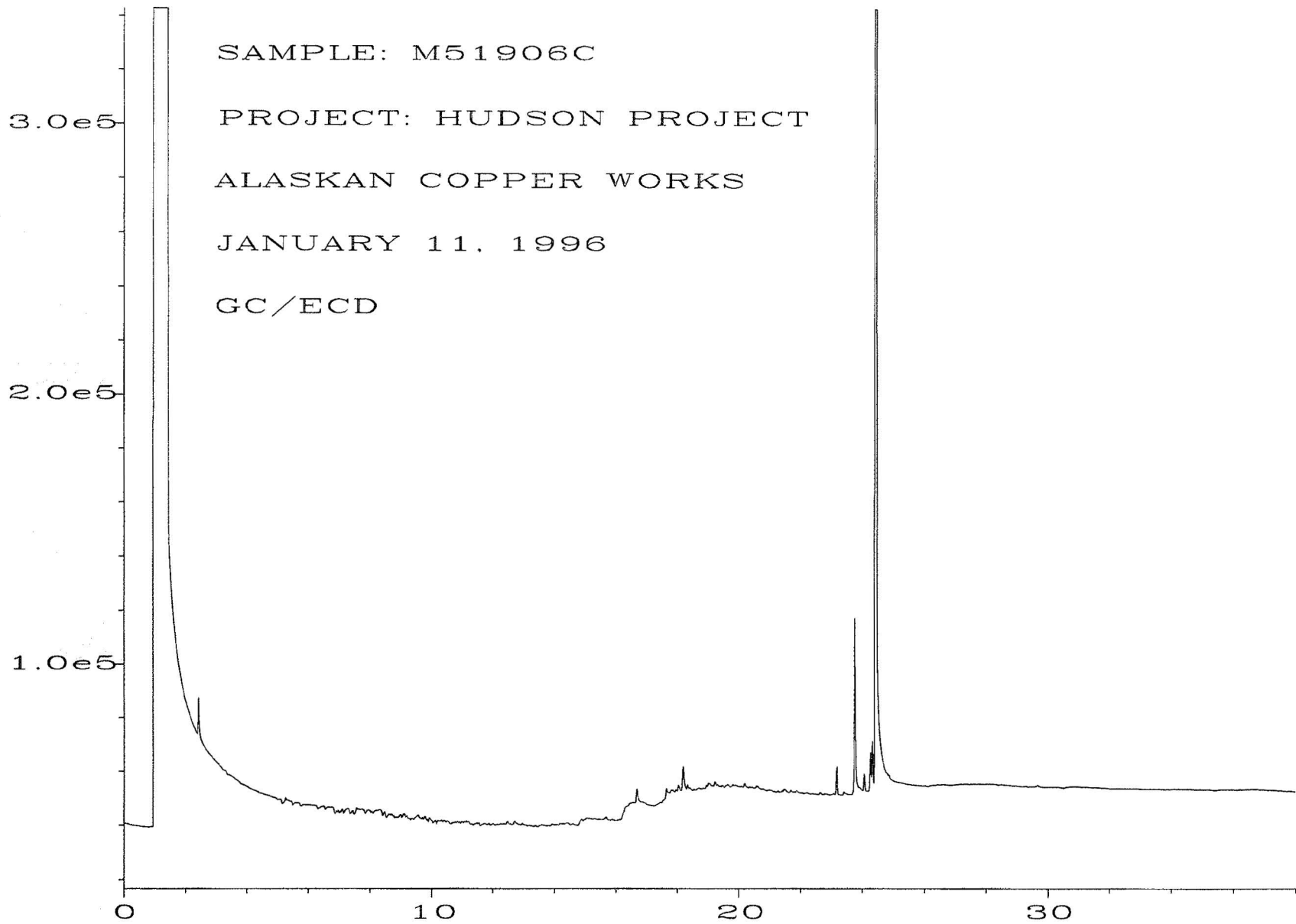


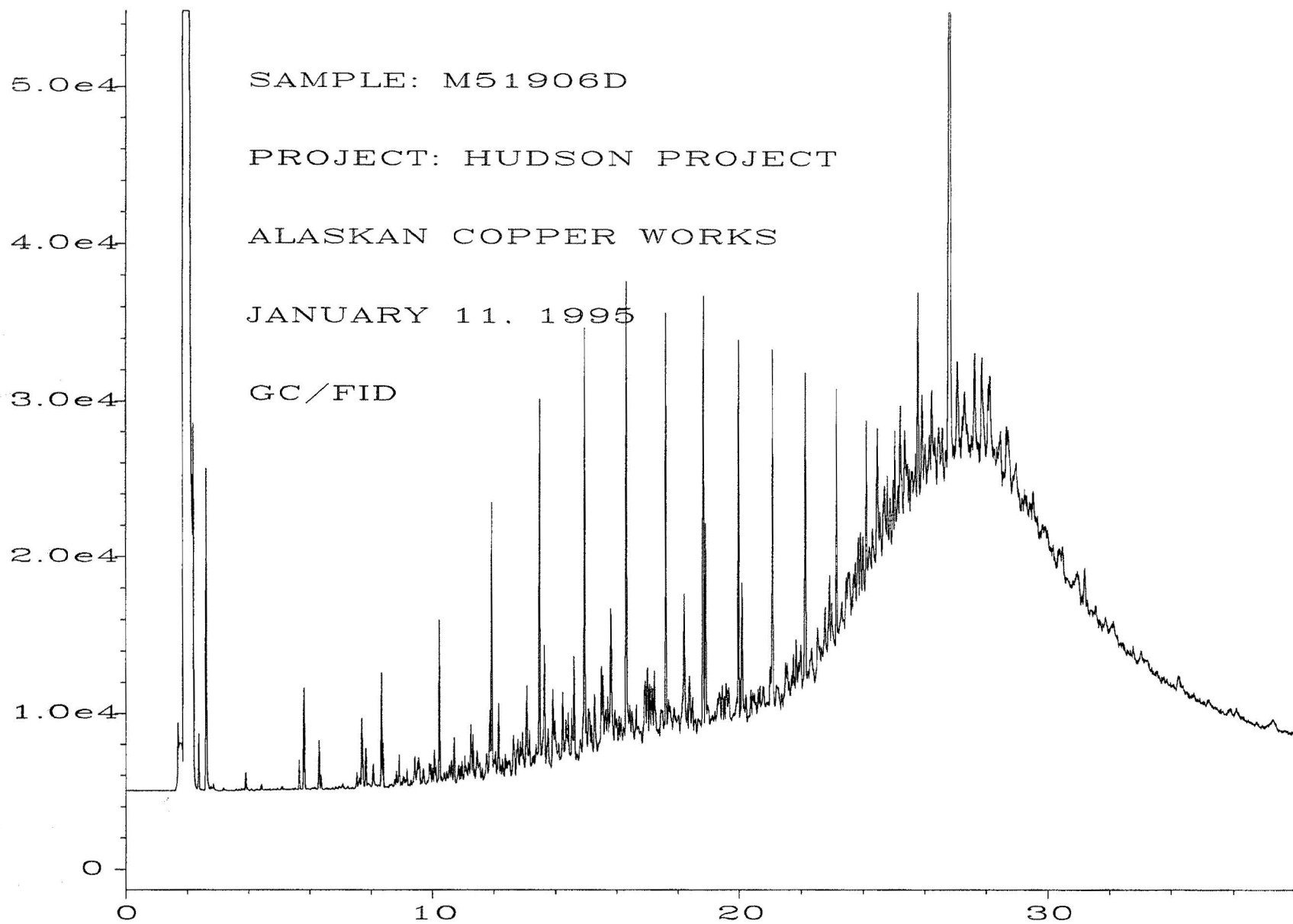


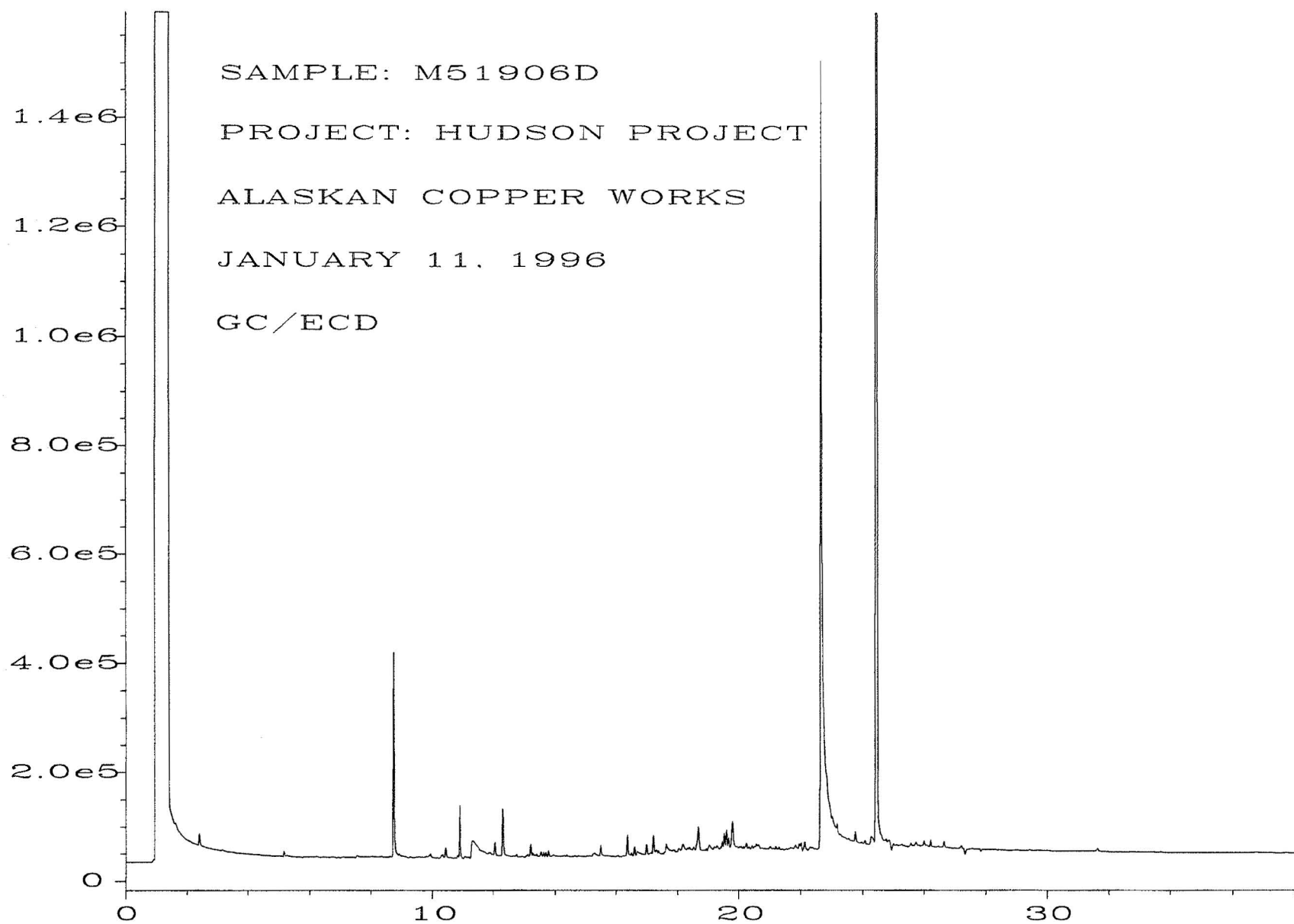












FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Andrew John Friedman
James E. Bruya, Ph.D.
(206) 285-8282

3012 16th Avenue West
Seattle, WA 98119-2029
FAX: (206) 283-5044

January 17, 1996

Gerry Thompson, Project Manager
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

Dear Mr. Thompson:

Enclosed are the results from the testing of material submitted on January 11, 1996 from your Hudson, PO #M51906 project.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Kurt Johnson
Chemist

keh

Enclosures

FAX: 382-7335

ACU0117R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Andrew John Friedman
James E. Bruya, Ph.D.
(206) 285-8282

3012 16th Avenue West
Seattle, WA 98119-2029
FAX: (206) 283-5044

January 17, 1996

DUPLICATE COPY

INVOICE #96ACU0117-2

Accounts Payable
Alaskan Copper Works
628 South Hanford
Seattle, WA 98134

RE: Project Hudson, PO #M51906: Results of testing requested by Gerry
Thompson, Project Manager for material submitted on January 11, 1996.

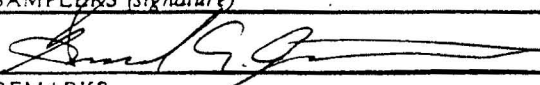
4 product samples characterized by capillary gas chromatography @ \$250 per sample	\$ 1,000.00
Less 50% Discount	<u>(500.00)</u>
Amount Due	\$ 500.00

16.5
FRIEDMAN & BRUYA, INC.
3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282

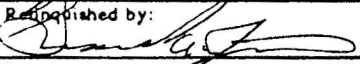
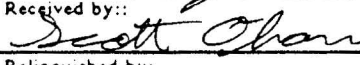
SAMPLE CHAIN OF CUSTODY

KNJ AO
1-11-96
2:20

Send Report To: Alaska Copper Workers Contact Gerard Thompson
Company 628 Harbor St
Address Seattle WA 98134
City, State, Zip (206) 382-8379 Date 1-11-96
Phone #

SITE NO.	PROJECT NAME	PURCHASE ORDER #
	Hudson Project	M 52906
SAMPLERS (signature)	PROJECT LOCATION	
	80 South Hudson	
REMARKS	SAMPLE DISPOSAL INFORMATION	
Leaky to Return & discuss with Chemist	<input type="checkbox"/> Dispose after 30 days <input checked="" type="checkbox"/> Return Samples <input type="checkbox"/> Call for Instructions	

Sample #	Date/Time Sampled	Type of Sample	# of Jars	Lab Sample #	Analyses Requested
M51906 A	1/10/96 2:00pm		1	65730	HFS
M51906 B	1/10/96 2:00pm		1	65731	HFS
M51906 C	1/10/96 2:00pm		1	65732	HFS
M51906 D	1/10/96 2:00pm		1	65733	HFS

SIGNATURE	PRINT NAME	COMPANY	Date	Time
Relinquished by: 	Gerard Thompson	A.C.W.	1-11-96	1:06pm
Received by: 	S. Olson	F&B, Inc.	1-11-96	1:07pm
Relinquished by:				
Received by:				